OM-197 509B

July 2002

Processes

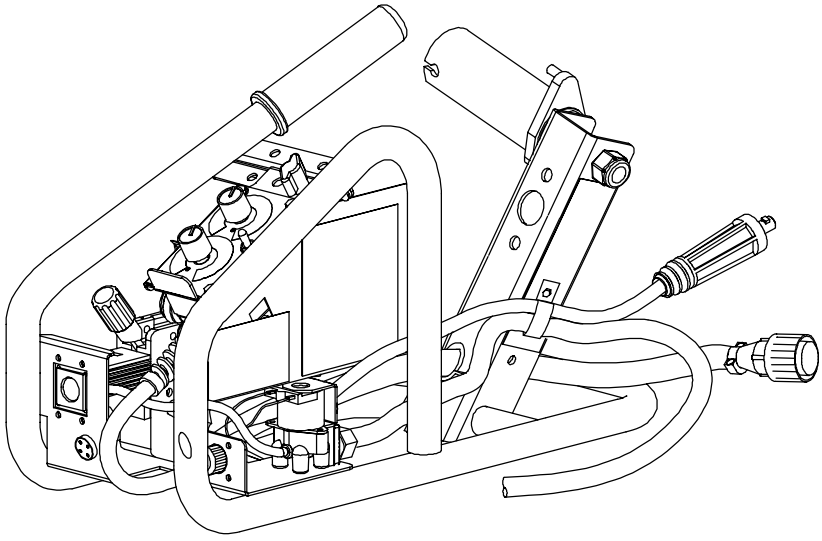
MIG (GMAW) Welding

Flux Cored (FCAW) Welding

Description

Wire Feeder

DS-2



OWNER'S MANUAL

Visit our website at

www.MillerWelds.com

From Miller to You

Thank you and *congratulations* on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite. We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide the exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.

ISO 9001 REGISTERED QUALITY SYSTEM

Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001 Quality System Standard.

Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog orindividual catalog sheets. **To locate your nearest distributor or service agency call 1-800-4-A-Miller, or visit us at www.MillerWelds.com on the web.**

TRUE BLUE® WARRANTY

Working as hard as you do – every power source from Miller is backed by the most hassle-free warranty in the business.

Miller offers a Technical Manual which provides more detailed service and parts information for your unit. To obtain a Technical Manual, contact your local distributor. Your distributor can also supply you with Welding Process Manuals such as SMAW, GTAW, GMAW, and GMAW-P.

Miller®

⚠ WARNING

This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)

TABLE OF CONTENTS

SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING 1
1-1. Symbol Usage 1
1-2. Arc Welding Hazards 1
1-3. Additional Symbols For Installation, Operation, And Maintenance 3
1-4. Principal Safety Standards 3
1-5. EMF Information 4
SECTION 2 – DEFINITIONS 5
2-1. Warning Label Definitions 5
SECTION 3 – INSTALLATION 6
3-1. Specifications 6
3-2. Site Selection 6
3-3. Equipment Connection Diagrams 7
3-4. Installing Wire Guides And Drive Rolls 7
3-5. 10-Pin Plug PLG8 Information 8
3-6. 7-Pin Plug PLG1 Information 8
3-7. 10-Pin Plug And Shielding Gas Connections 8
3-8. Connecting Weld Cable 9
3-9. Connecting Welding Gun 10
3-10. Changing Nameplates 10
3-11. Installing Wire Spool And Adjusting Hub Tension 11
3-12. Threading Welding Wire 12
SECTION 4 – OPERATION 13
4-1. Pendant Controls 13
SECTION 5 – MAINTENANCE & TROUBLESHOOTING 14
5-1. Routine Maintenance 14
5-2. Troubleshooting 14
SECTION 6 – ELECTRICAL DIAGRAM 16
SECTION 7 – PARTS LIST 18

SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

som _nd_4/98

1-1. Symbol Usage

Means Warning! Watch Out! There are possible hazards with this procedure! The possible hazards are shown in the adjoining symbols.

▲Marks a special safety message.

Means "Note"; not safety related.

This group of symbols means Warning! Watch Out! possible ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2. Arc Welding Hazards

▲The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-4. Read and follow all Safety Standards.

▲Only qualified persons should install, operate, maintain, and repair this unit.

▲During operation, keep everybody, especially children, away.

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

- Do not touch live electrical parts.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Use AC output ONLY if required for the welding process.
- If AC output is required, use remote output control if present on unit.
- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
- Always verify the supply ground – check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach proper grounding conductor first – double-check connections.
- Frequently inspect input power cord for damage or bare wiring – replace cord immediately if damaged – bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal.

SIGNIFICANT DC VOLTAGE exists after removal of input power on inverters.

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any parts.

FUMES AND GASES can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
- If ventilation is poor, use an approved air-supplied respirator.
- Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watch-person nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

ARC RAYS can burn eyes and skin.

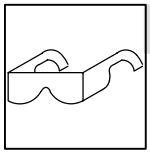
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (leather and wool) and foot protection.

WELDING can cause fire or explosion.

Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding.

- Protect yourself and others from flying sparks and hot metal.
- Do not weld where flying sparks can strike flammable material.
- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.



FLYING METAL can injure eyes.

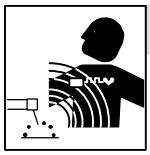
- Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag.
- Wear approved safety glasses with side shields even under your welding helmet.

BUILDUP OF GAS can injure or kill.

- Shut off shielding gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.

HOT PARTS can cause severe burns.

- Do not touch hot parts bare handed.
- Allow cooling period before working on gun or torch.



MAGNETIC FIELDS can affect pacemakers.

- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.

CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder – explosion will result.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

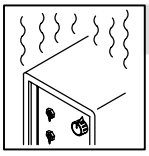
1-3. Additional Symbols For Installation, Operation, And Maintenance

FIRE OR EXPLOSION hazard.

- Do not install or place unit on, over, or near combustible surfaces.
- Do not install unit near flammables.
- Do not overload building wiring – be sure power supply system is properly sized, rated, and protected to handle this unit.

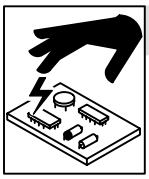
FALLING UNIT can cause injury.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.



OVERUSE can cause OVERHEATING

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block or filter airflow to unit.



STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.

MOVING PARTS can cause injury.

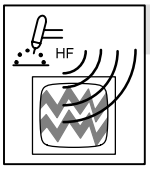
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.

WELDING WIRE can cause injury.

- Do not press gun trigger until instructed to do so.
- Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

MOVING PARTS can cause injury.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.



H.F. RADIATION can cause interference.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.

ARC WELDING can cause interference.

- Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 100 meters from any sensitive electronic equipment.
- Be sure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.

1-4. Principal Safety Standards

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami FL 33126

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices For Occupation And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting And Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

1-5. EMF Information

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

Welding current, as it flows through welding cables, will cause electromagnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: “The body of evidence, in the committee’s judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard.” However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, use the following procedures:

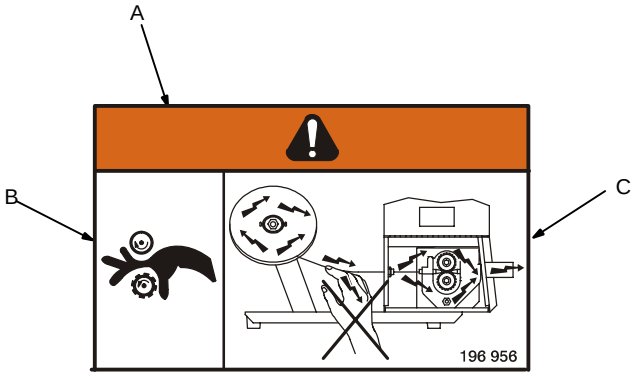
1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Pacemakers:

Pacemaker wearers consult your doctor first. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – DEFINITIONS

2-1. Warning Label Definitions



A. Warning! Watch Out! There are possible hazards as shown by the symbols.

B. Drive rolls can injure fingers.

C. Welding wire and drive parts are at welding voltage during operation – keep hands and metal objects clear.

1 Electric shock can kill.

1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.

1.2 Protect yourself from electric shock by insulating yourself from work and ground.

1.3 Disconnect input plug or power before working on machine.

2 Breathing welding fumes can be hazardous to your health.

2.1 Keep your head out of the fumes.

2.2 Use forced ventilation or local exhaust to remove the fumes.

2.3 Use ventilating fan to remove fumes.

3 Welding sparks can cause explosion or fire.

3.1 Keep flammables away from welding. Don't weld near flammables.

3.2 Welding sparks can cause fires. Have a fire extinguisher nearby and have a watch person ready to use it.

3.3 Do not weld on drums or any closed containers.

4 Arc rays can burn eyes and injure skin.

4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.

5 Become trained and read the instructions before working on the machine or welding.

6 Do not remove or paint over (cover) the label.

SECTION 3 – INSTALLATION

3-1. Specifications

Welding Power Source Type	Type of Input Power	Wire Feed Speed Range	Wire Diameter Range	Welding Circuit Rating	Overall Dimensions	Weight
Deltaship Constant Voltage (CV) DC With 10-Pin Receptacle	24 Volts DC (5 Amp) For Wire Feed Motor 24 Volts AC (0.5 Amp) For Gas Valve	0 to 780 ipm (0 To 20 mpm)	**Solid Wire** .045 To 1/16 in (1.2 To 1.6 mm) **Flux Cored Wire** .045 To .068 in (1.2 To 1.7 mm) **Max Spool** Weight: 44 lb (20 kg)	38 Volts, 350 Amperes, 100% Duty Cycle	Length: 20-7/8 in (530 mm) Width: 9 in (229 mm) Height: 13-3/4 in (286 mm)	17.5 lb (8 kg)

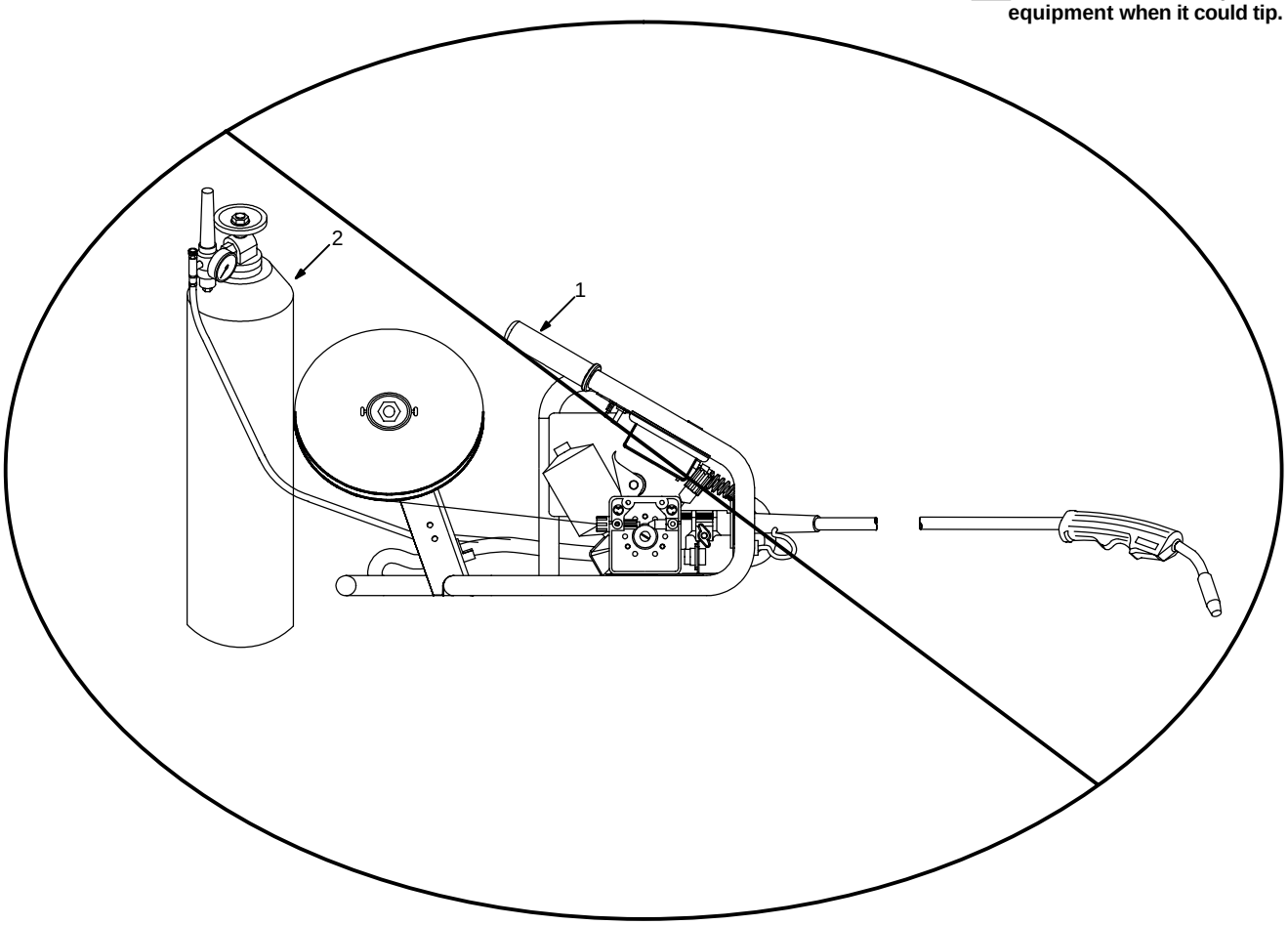
3-2. Site Selection

1 Wire Feeder

2 Gas Cylinder (Customer Supplied)

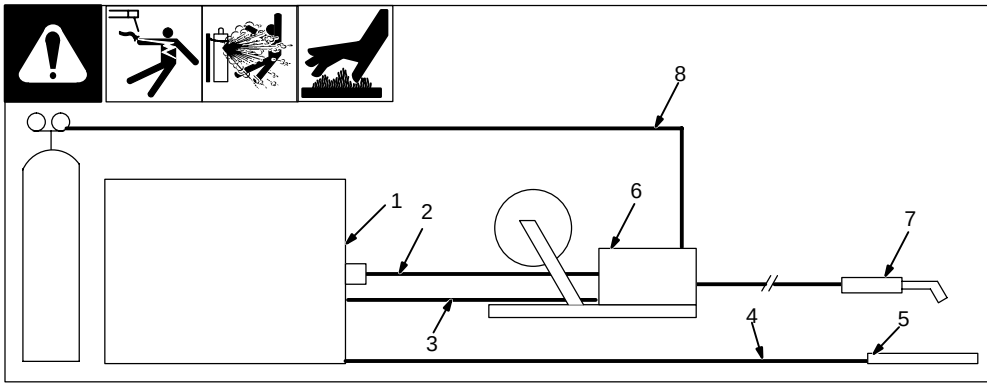
▲**Do not put feeder where welding wire hits cylinder.**

▲**Do not move or operate equipment when it could tip.**



Ref. ST-802 483-A

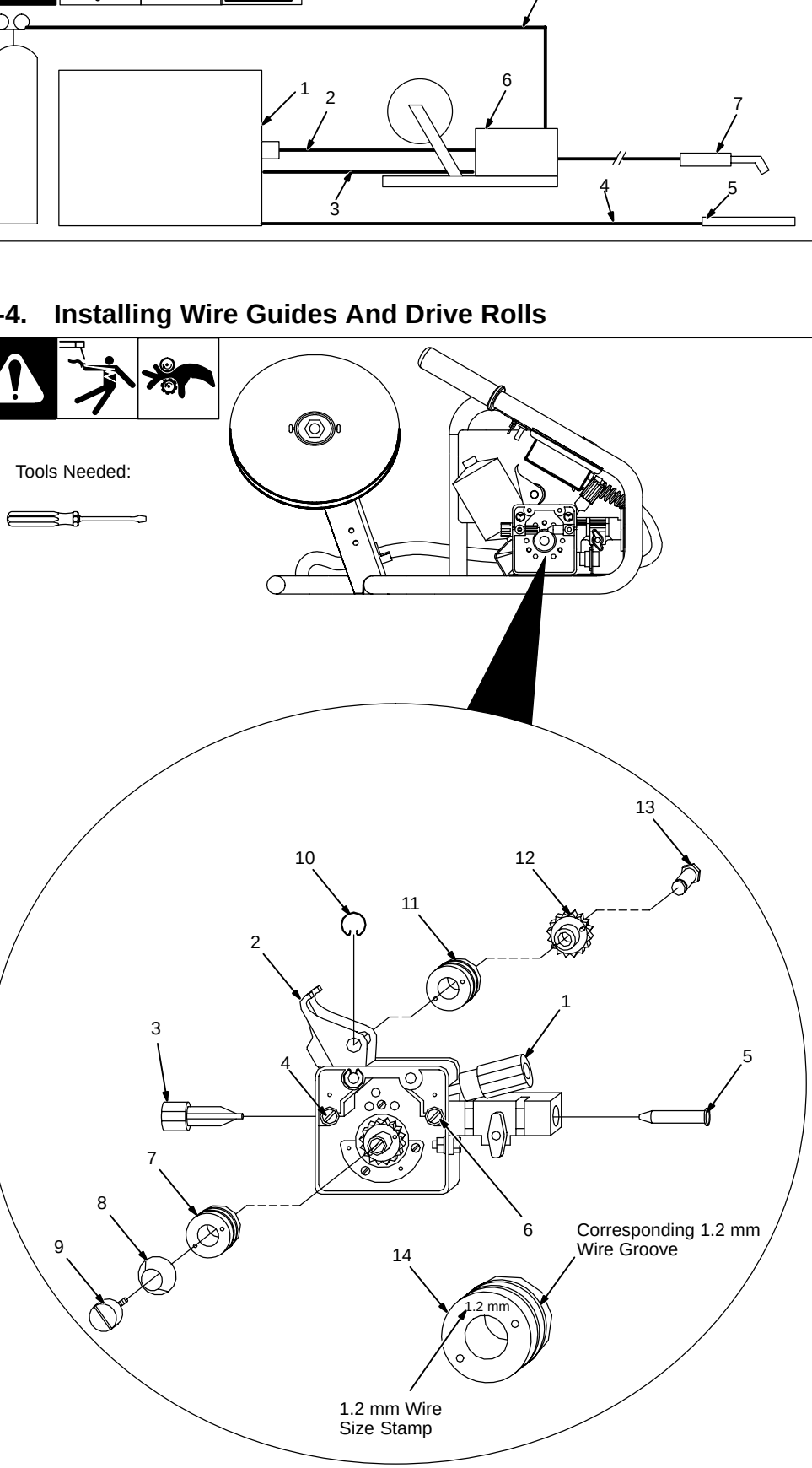
3-3. Equipment Connection Diagrams



1 Deltaship 502 Welding Power Source With 24 VAC Power
2 10-Pin Control Cord
3 Positive Weld Cable (Customer Supplied)
4 Work Cable (Customer Supplied)
5 Work
6 Wire Feeder
7 Welding Gun
8 Gas Hose (Customer Supplied)

3-4. Installing Wire Guides And Drive Rolls

Tools Needed:



1 Pressure Assembly Knob
2 Pressure Assembly Arm

Move Knob to the right, and pressure arm pops up.

3 Inlet Wire Guide
4 Inlet Wire Guide Securing Screw

To change inlet wire guide, loosen screw and remove guide.

5 Outlet Wire Guide
6 Outlet Wire Guide Securing Screw

To change outlet wire guide, loosen screw and remove guide out front of gun block.

7 Lower Drive Roll
8 Coned Spacer Washer
9 Thumb Screw

To change drive roll, remove thumb screw and coned spacer washer, and slide drive roll off shaft. Be sure holes in drive roll line up with pins on gear.

10 Retaining Clip
11 Upper Drive Roll
12 Gear
13 Pin

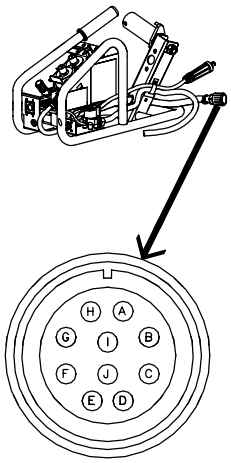
To change upper drive roll, remove retaining clip from pin. Slide pin out, and lift drive roll and gear out of pressure arm. When installing upper drive roll, be sure holes in drive roll line up with pins on gear.

14 Drive Roll Size

When installing a drive roll, either into the pressure arm or onto the lower gear adapter, install drive roll with the wire size stamp of the wire being used (i.e. 1.2 mm) facing the operator, even though the corresponding wire groove is on the opposite side of the drive roll.

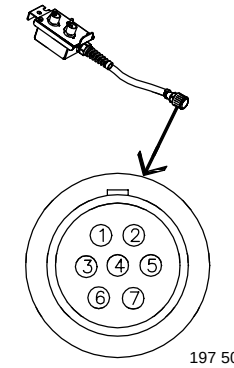
Ref. ST-802 483-A / ST-802 481

3-5. 10-Pin Plug PLG8 Information



Pin	Pin Information
A	24 volts ac for gas valve control when triggered or purging gas.
B	+15 volts dc with gun trigger open; 0 volts dc with gun trigger closed.
C	Circuit common.
D	0 to +10 volts dc output from min to max of Output Command control R1.
E	+10 volts dc input.
F	0 to +10 volts dc output from min to max of Wire Speed control R2
G	+15 volts dc with Jog switch S3 open; 0 volts dc with switch closed.
H	Motor positive (+), (0 to +24 volts dc input to wire drive motor M1 with respect to pin I.)
I	Motor negative (–).
J	Not used

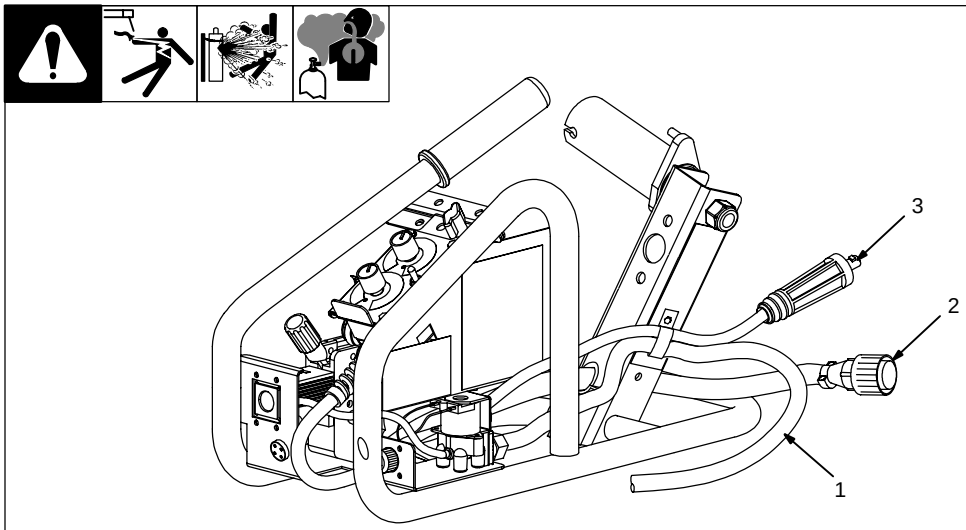
3-6. 7-Pin Plug PLG1 Information



197 504

Pin	Pin Information
1	Not used.
2	Not used.
3	Circuit common.
4	0 to +10 volts dc output from min to max of Output Command control R1.
5	+10 volts dc input.
6	0 to +10 volts dc output from min to max of Wire Speed control R2
7	+15 volts dc with Jog switch S3 open; 0 volts dc with switch closed.

3-7. 10-Pin Plug And Shielding Gas Connections



1 Gas Hose (Customer Supplied)

Connect to gas supply.

2 10 Pin Plug PLG8

Use plug to make connection to welding power source.

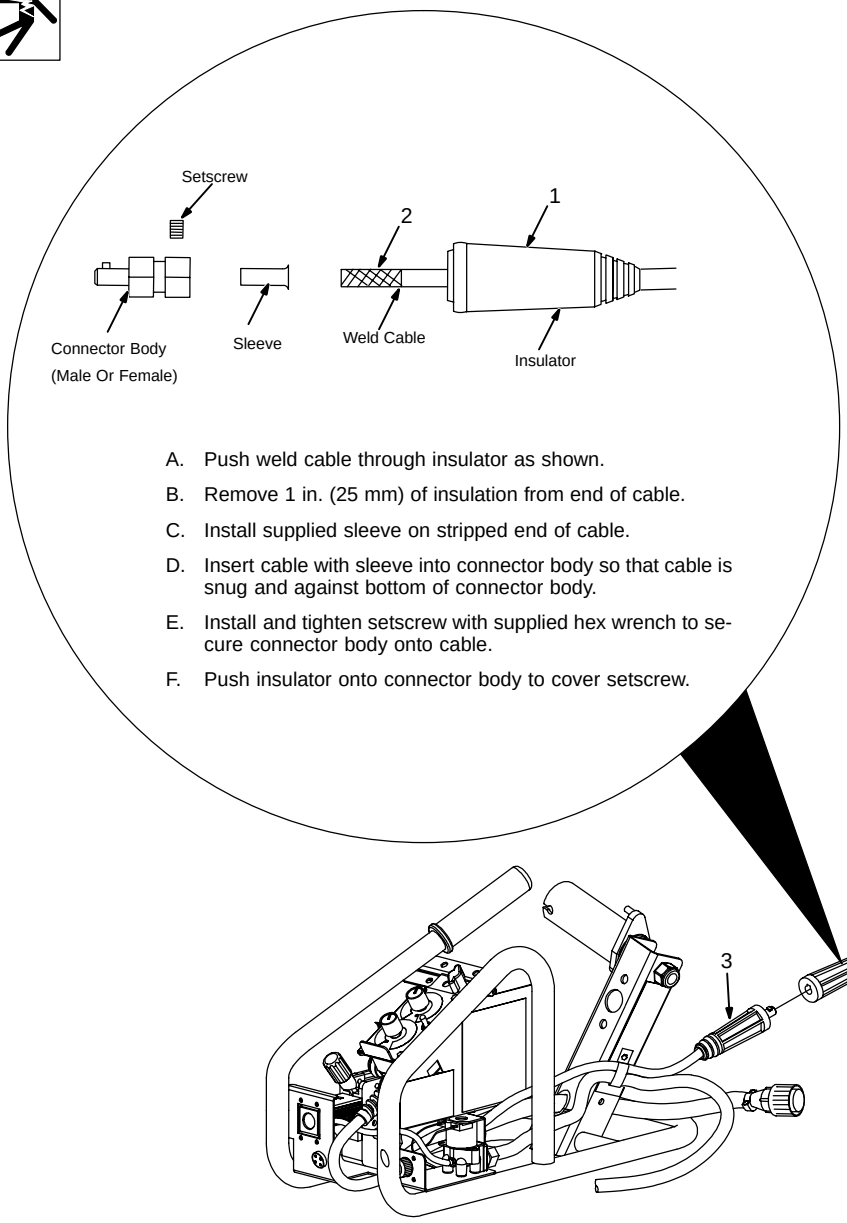
3 Weld Cable w/Quick Connect

Tools Needed:

11/16 in

Ref. St–802 483-A

3-8. Connecting Weld Cable



1 Female Weld Cable Connector (Supplied)

2 Weld Cable (Customer Supplied)

Select weld cable according to welding power source Owner's manual.

Install female weld cable connector as shown.

3 Male Weld Cable Connector

Connect male and female weld cable connectors.

A. Push weld cable through insulator as shown.

B. Remove 1 in. (25 mm) of insulation from end of cable.

C. Install supplied sleeve on stripped end of cable.

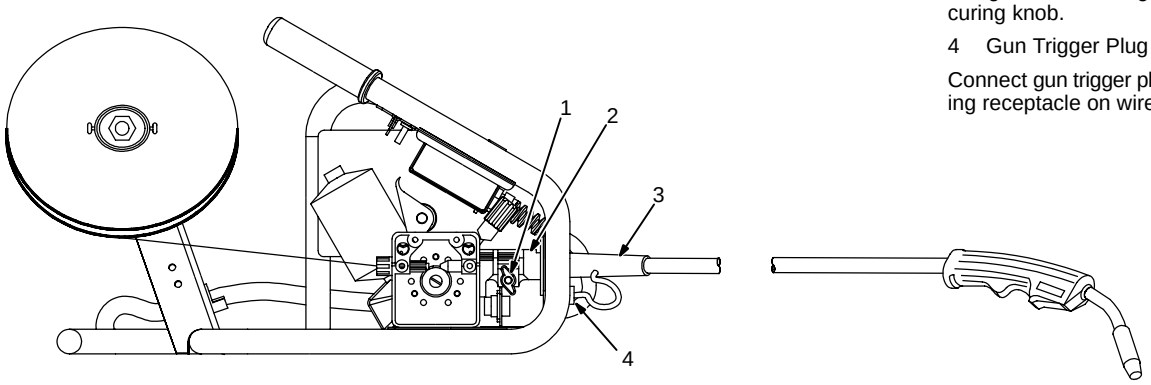
D. Insert cable with sleeve into connector body so that cable is snug and against bottom of connector body.

E. Install and tighten setscrew with supplied hex wrench to secure connector body onto cable.

F. Push insulator onto connector body to cover setscrew.

Ref. ST-802 483-A

3-9. Connecting Welding Gun



1 Gun Securing Knob

Loosen knob.

2 Gun Block

3 Gun End

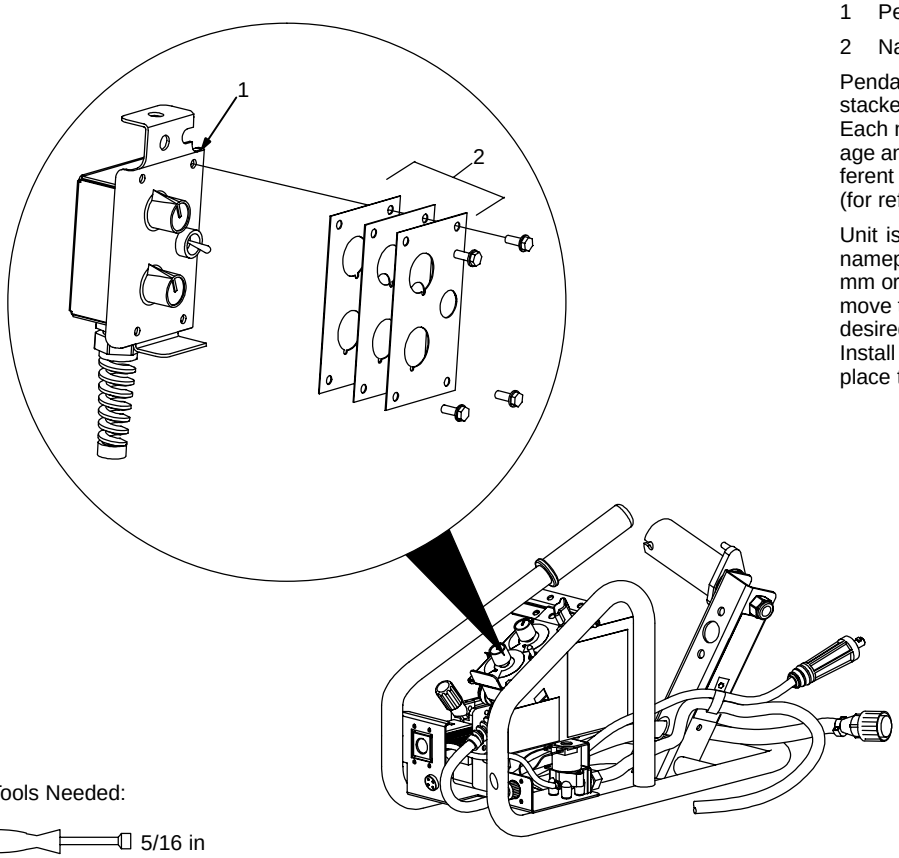
Slide gun end as far as possible into gun block and tighten gun securing knob.

4 Gun Trigger Plug

Connect gun trigger plug to matching receptacle on wire feeder.

Ref. ST-802 483-A

3-10. Changing Nameplates



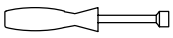
1 Pendant

2 Nameplates

Pendant has three nameplates stacked one on top of the other. Each nameplate contains the voltage and amperage ranges for a different size flux cored welding wire (for reference only).

Unit is shipped with 1.2 mm wire nameplate on top. To change to 1.4 mm or 1.6 mm wire nameplate, remove the four screws and bring the desired nameplate to the front. Install the four (4) screws back in place to hold the nameplates.

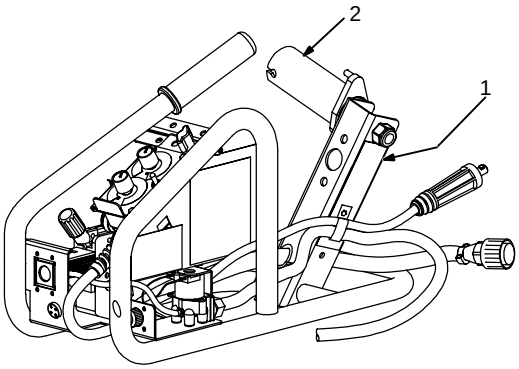
Tools Needed:

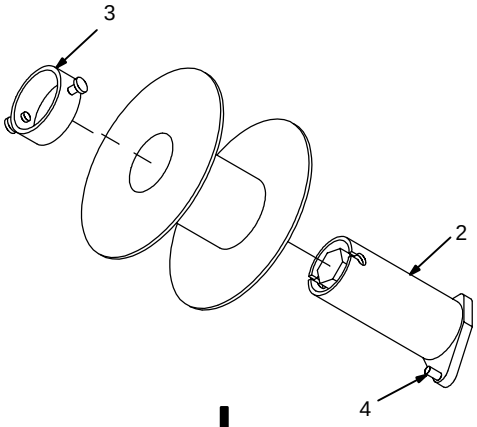


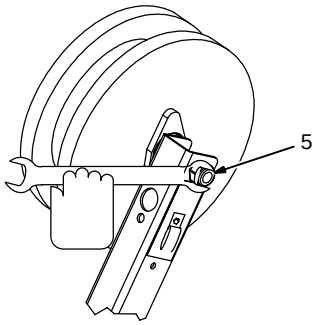
5/16 in

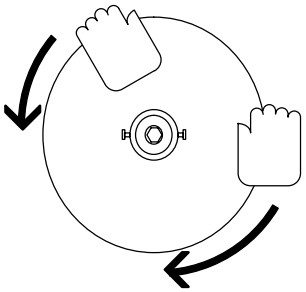
Ref. ST-802 483-A

3-11. Installing Wire Spool And Adjusting Hub Tension









When a slight force is needed to turn spool, tension is set.

1 Hub Support Arm

2 Spool Hub

3 Retaining Ring

4 Hub Pin

Remove retaining ring. Slide wire spool onto spool hub so wire feeds off bottom of spool . Install spool so hub pin fits spool hole. Reinstall retaining ring.

5 Tension Nut

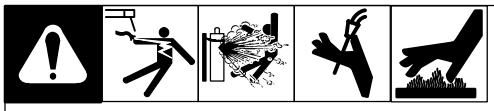
Adjust tension nut so a slight force is needed to turn spool.

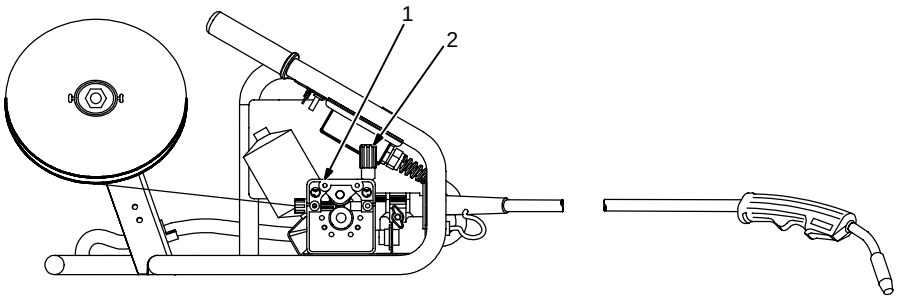
Tools Needed:

15/16 in

Ref. ST-802 483-A / Ref. ST-072 573-B

3-12. Threading Welding Wire





1 Pressure Assembly

2 Pressure Assembly Adjustment Knob

Lay gun cable out straight.

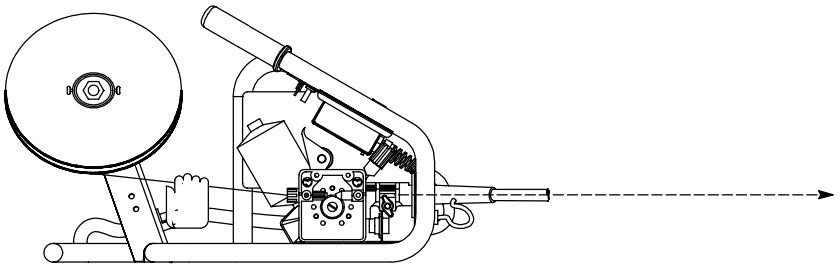
A Open pressure assembly, hold wire tightly, and cut off end. Push wire through guides into gun.

B Close and tighten pressure assembly, and let go of wire.

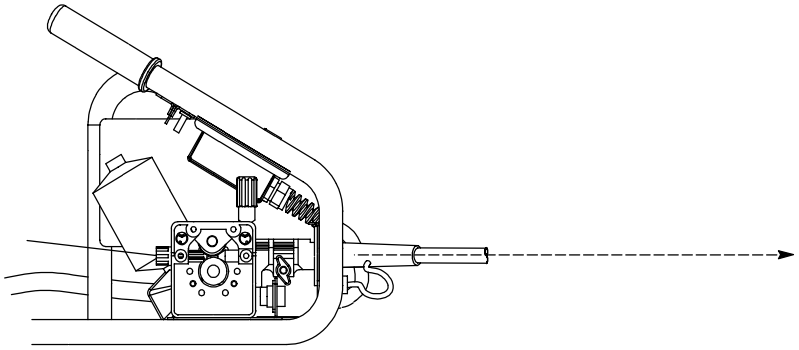
C To adjust drive roll pressure, press gun trigger to feed wire against wood surface. Tighten knob so wire does not slip.

Cut off wire.

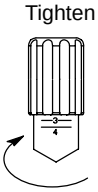
A

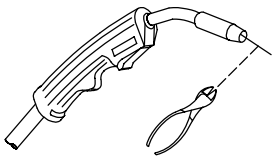


B



C

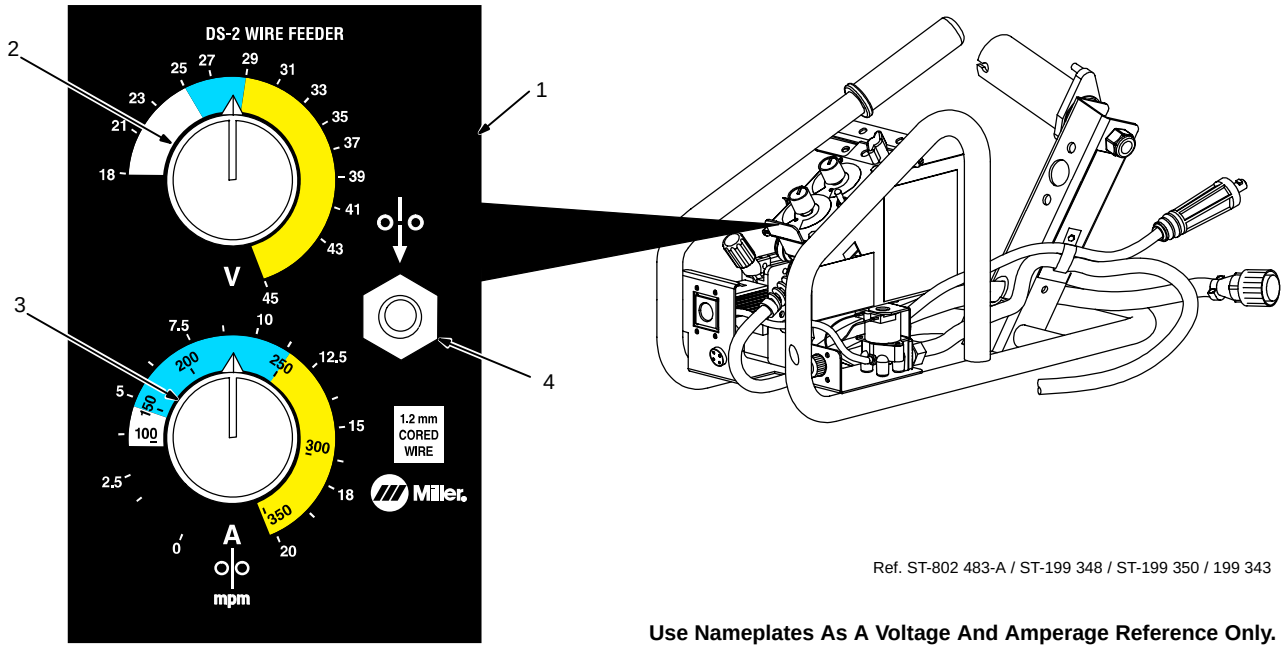




Tools Needed:

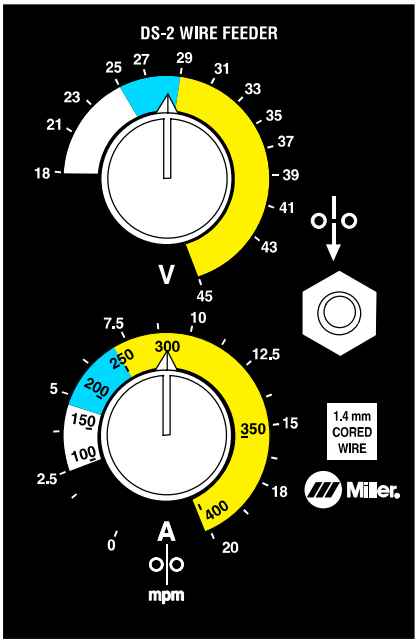
Ref. ST-802 483-A

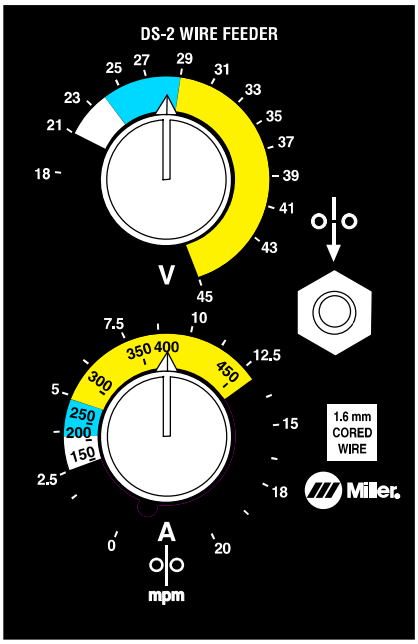
4-1. Pendant Controls



Ref. ST-802 483-A / ST-199 348 / ST-199 350 / 199 343

Use Nameplates As A Voltage And Amperage Reference Only.





Controls are pendant mounted. An optional remote pendant extension cord is available.

1 Nameplate

Pendant has three nameplates stacked one on top of the other. Each nameplate contains the voltage and amperage range for a different size flux cored welding wire (for reference only).

Unit is shipped with 1.2 mm wire nameplate on top. See Section 3-10 to change to 1.4 mm or 1.6 mm flux cored welding wire nameplate.

2 Voltage Control

Use control to set welding power source voltage at the wire feeder. Numbers are for reference only.

3 Wire Speed Control

Use control to adjust wire feed speed from 0 to 20 meters per minute.

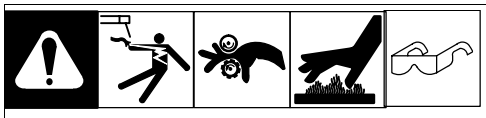
Match colored bands on voltage and wire speed controls to get an acceptable welding condition.

4 Jog Switch

Use Jog switch to momentarily feed welding wire at speed set on Wire Speed control without energizing welding circuit or shielding gas valve.

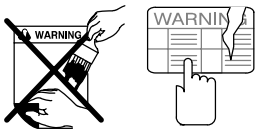
SECTION 5 – MAINTENANCE & TROUBLESHOOTING

5-1. Routine Maintenance

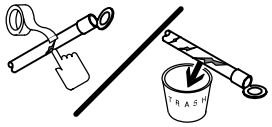


▲Disconnect power before maintaining.

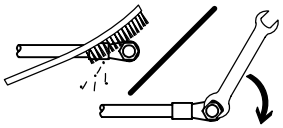
3 Months



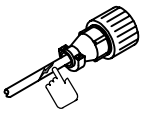
Replace Unreadable Labels



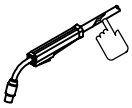
Repair Or Replace Cracked Weld Cable



Clean And Tighten Weld Terminals



10-Pin Cord

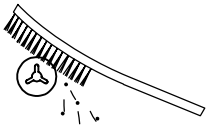


Gun Cable

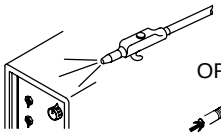
Gas Hose

Replace Cracked Parts

6 Months



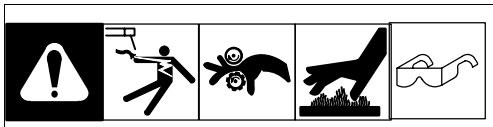
Clean Drive Rolls



OR

Blow Out Or Vacuum Inside, During Heavy Service, Clean Monthly

5-2. Troubleshooting



Trouble	Remedy
No weld output; unit completely inoperative.	Place line disconnect switch in On position (see welding power source owner's manual).
	Check and replace line fuse(s), if necessary, or reset circuit breaker (see welding power source owner's manual).
	Check for proper input power connections (see welding power source owner's manual).
	Check for proper jumper link position (see welding power source owner's manual).
No weld output; Power switch pilot light on.	Check, repair, or replace feeder (see welding power source owner's manual).
	Unit overheated. Allow unit to cool with fan On (see welding power source owner's manual).
	Have Factory Authorized Service Agent check control board PC1 and/or motor drive board PC2.
Unit provides only maximum or minimum weld output.	Have Factory Authorized Service Agent check control board PC1, motor drive board PC2 and Hall Device HD1.
Erratic or improper weld output.	Use proper size and type of weld cable (see welding power source owner's manual).
	Clean and tighten all weld connections.
	Check wire feeder installation (see Section 3-3
	Use proper tap on stabilizer (see welding power source owner's manual).
	Have Factory Authorized Service Agent check control board PC1, motor drive board PC2 and/or SCR in main rectifier.
No 115 volts ac output at duplex receptacle.	Reset circuit breaker CB1 (see welding power source owner's manual).

Trouble	Remedy
Fan in welding power source not operating. Note: fan runs only when cooling is necessary.	Check for and remove anything blocking fan movement.
	Have Factory Authorized Service Agent check fan motor.
Wire does not feed, unit completely inoperative.	Check 10–pin plug PLG8 connections (see Section 3-7).
	Check input power.
Wire does not feed.	Check circuit breaker CB2 on welding power source, and reset if necessary (see welding power source owner's manual).
	Check gun trigger connection at wire feeder (see Section 3-9). Check gun trigger leads and trigger switch.
	Have Factory Authorized Service Agent check drive motor, control board PC1, and motor board PC2.
Wire feeds erratically.	Readjust hub tension and drive roll pressure (see Section 3-11 and 3-12).
	Use correct size drive roll (see Parts List).
	Clean or replace dirty or worn drive roll (see 3-4 Section).
	Remove weld spatter around nozzle opening.
	Replace contact tip or liner.
	Have Factory Authorized Service Agent check drive motor and control board PC1.
Wire feeds when Jog switch is pressed but not when gun trigger is pressed.	Check gun trigger connection at wire feeder (see Section 3-9). Check gun trigger leads and trigger switch.
Wire feeds as soon as power is applied.	Check gun trigger.
Wire does not feed until trigger is pressed, but continues to feed after trigger is released.	Check position of Mode switch on welding power source. This is normal operation when switch is in Crater Fill On or Trigger Hold On positions (see welding power source owner's manual).
	Check for short between gun trigger leads and weld cable. Repair or replace gun trigger leads.
Gas valve rattles loudly and wire feeds slowly or erratically.	Check for short between gun trigger leads and weld cable. Repair or replace gun trigger leads.
Gas does not flow; wire feeds.	Check gas valve and flowmeter.

SECTION 6 – ELECTRICAL DIAGRAM

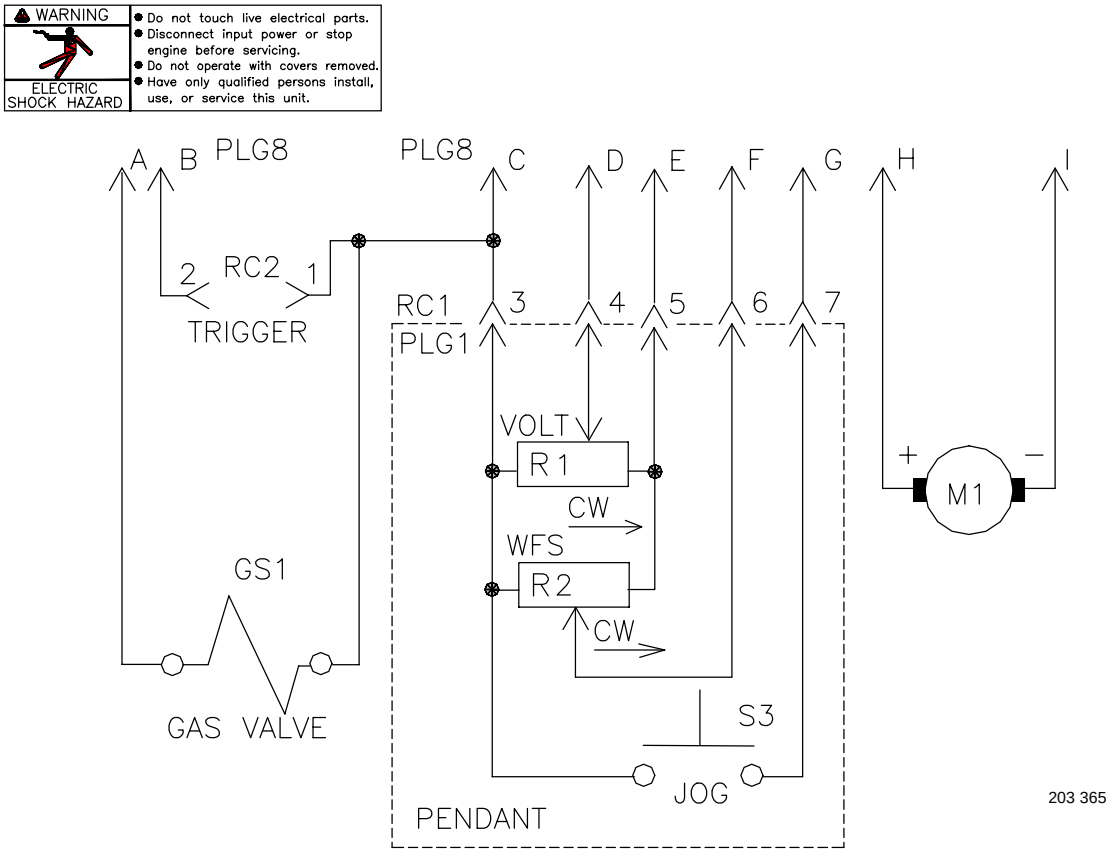
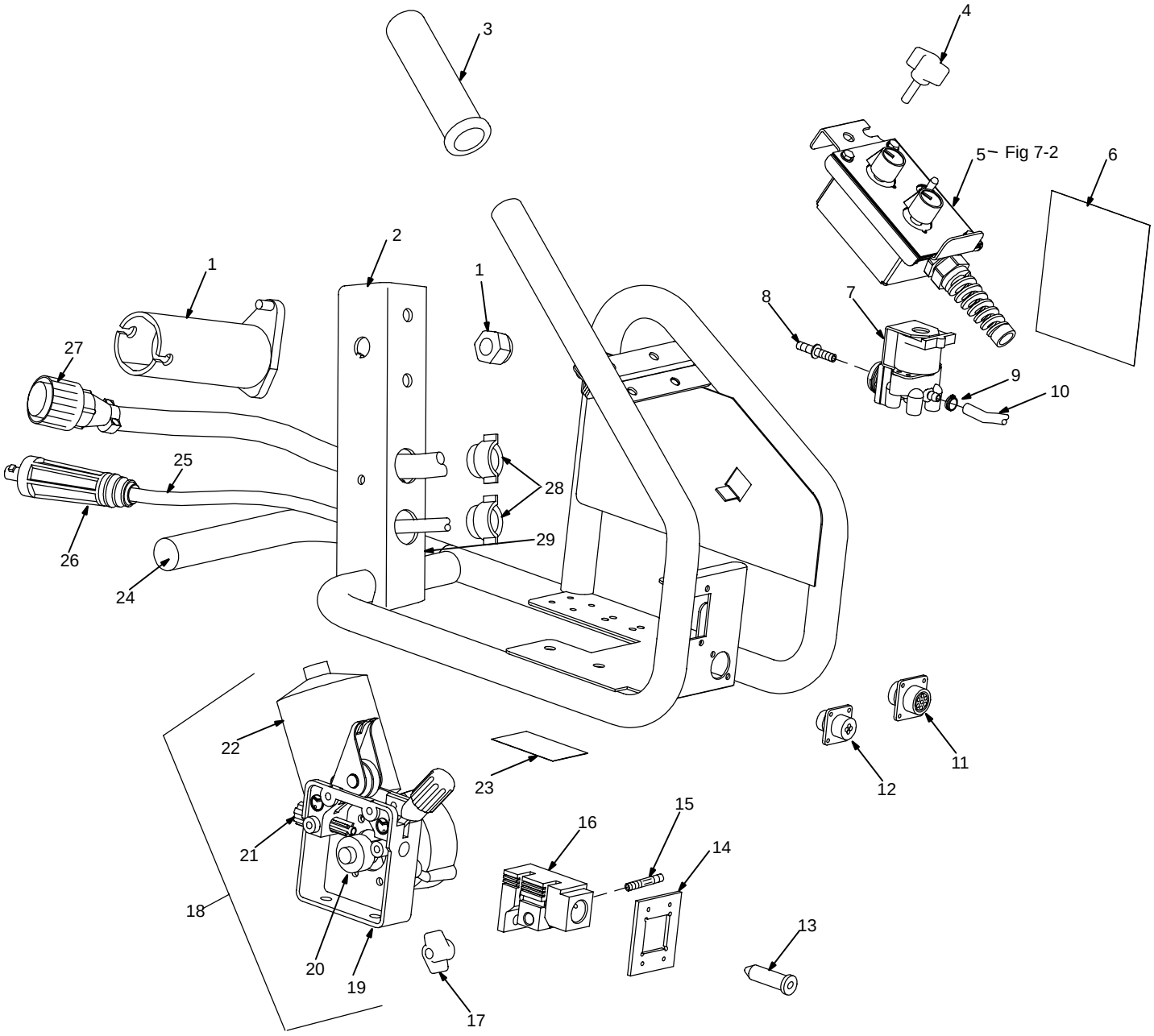


Figure 6-1. Circuit Diagram For Wire Feeder

Notes

SECTION 7 – PARTS LIST

Hardware is common and not available unless listed.



Ref. 802 586

Figure 7-1. Main Assembly

Item No.	Part No.	Description	Quantity

Figure 7-1. Main Assembly

1	072 094	. . Hub+Spindle Assy,	1
2	+196 937	. . Assembly, Frame	1
3	196 954	. . Grip, Handle	1
4	196 951	. . Knob, Pendant	1
5	196 948	. . Pendant, Feeder (Figure 7-2)	1
6	197 316	. . Label, Warning General Precautionary Wordless Wf	1
7	125 785	. . Valve, 24vac 2way Custom Port 1/8 Orf W/Frict	1
8	112 863	. . Ftg, Hose Brs Barbed M 1/4 Tbg X 5/8–18 Sae Flare	1
9	149 332	. . Clamp, Hose .405 – .485 Clp Dia Slfttng Olive Dra	1
10	095 637	. . Hose, Sae .187 Id X .410 Od X 13.000	1
11	199 846	. . Conn, Circ Cpc 7skt Size 13 Recpt Panel Pushin	1
12	048 282	. . Conn, Circ Cpc 4skt Size 11 Rcpt Panel Pushin	1
13	193 707	. . Guide, Wire Adapter 1.2–1.6	1
13	♦197 175	. . Guide, Wire Adapter 1.6–1.7	1
14	196 946	. . Insulator, Gun Block	1
15	079 633	. . Ftg, Hose Brs Barbed Nipple 3/16 Tbg	1
16	193 681	. . Block, Connector Gun (Miller)	1
17	196 947	. . Knob, Gun Block	1
18	196 944	. . Drive Assy, wire (consisting of)	1
19	197 305	. . . Head Feed	1
20	194 799	. . . Kit, Drive Roll, Vk 1.2–1.4	1
20	♦194 797	. . . Kit, Drive Roll, Vk 1.6–1.7	1
21	197 309	. . . Inlet Guide 1.2–1.6	1
21	♦197 311	. . . Inlet Guide 1.6–1.7	1
22	196 945	. . . Motor, Drive Assy Wire	1
23	196 956	. . Label, Warning Electric Shock And Pinch Wordless	1
24	197 975	. . Plug, Cap	1
25	199 927	. . Cable, Weld	1
26	042 534	. . Connector Kit, Dinse 1 Plug 1 Rcpt 70mm	1
27	203 363	. . Cord, Power	1
28	010 916	. . Conn, Clamp Cable .750	2
29	127 854	. . Clamp, Stl Cush 1.312 Dia X .343 Mtg Hole	1

♦OPTIONAL

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Hardware is common and not available unless listed.

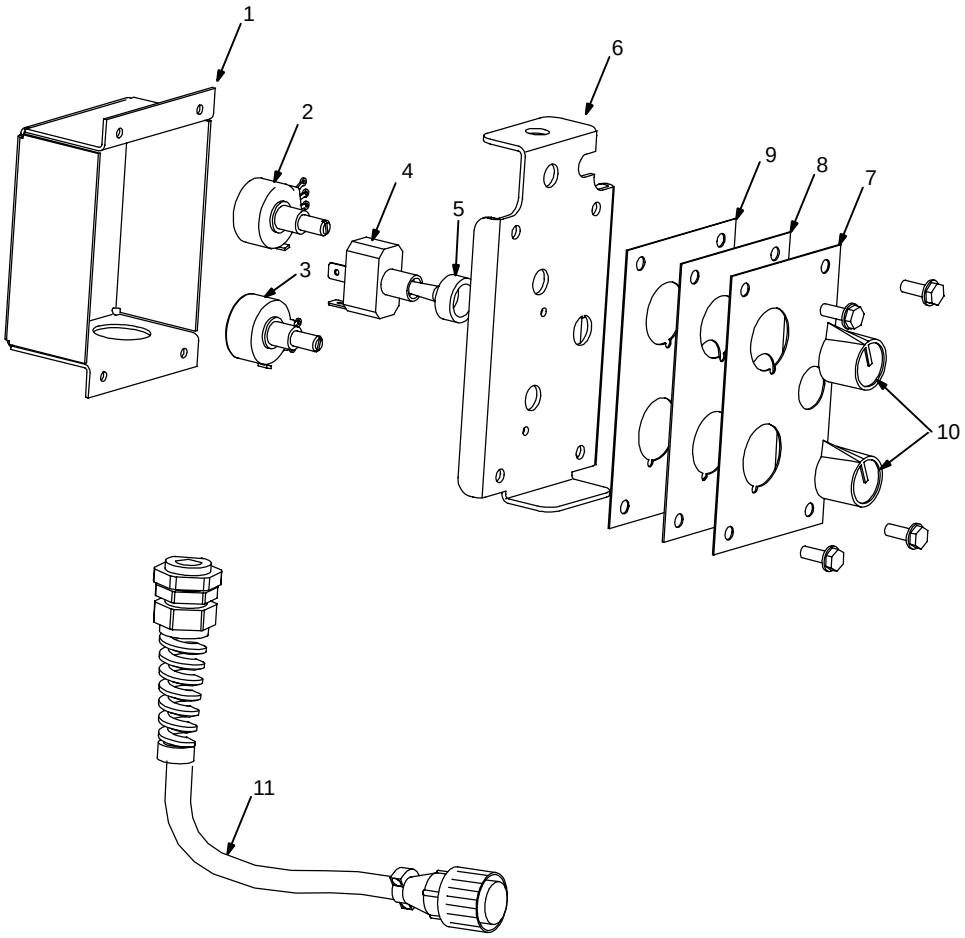


Figure 7-2. Pendant Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 7-2. Pendant Assembly (Figure 7-1 Item 5)	
1		196949	Box, Pendant	1
2		035897	Pot, Cp Std Slot 1t 2. W 1k Linear	1
3		073562	Pot, Cp Std Slot 1t 2. W 10k Linear	1
4		021467	Switch, Tgl Spst 3a 250v Off–none–(On) Spd Term	1
5		189404	Spacer, Nylon	1
6		196950	Cover, Pendant	1
7		196943	Nameplate, Pendant 1.2 mm	1
8		199348	Nameplate, Pendant 1.4 mm	1
9		199350	Nameplate, Pendant 1.6 mm	1
10		097922	Knob, Pointer .875 Dia X .250 Id W/Set Screwsplstc	2
11		196953	Cord, Pendant	1
		070584	Tubing, Gl Acryl .129– .141 Id # 9xspool Yel Fa1	0.5

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Warranty Questions?

Call
1-800-4-A-MILLER
for your local
Miller distributor.

Your distributor also gives you ...

Service
You always get the fast, reliable response you need. Most replacement parts can be in your hands in 24 hours.

Support
Need fast answers to the tough welding questions? Contact your distributor. The expertise of the distributor and Miller is there to help you, every step of the way.

Miller

TRUE BLUE® WARRANTY

Effective January 1, 2002
(Equipment with a serial number preface of "LC" or newer)

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY – Subject to the terms and conditions below, Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to a North American distributor or eighteen months after the equipment is sent to an International distributor.

1. 5 Years Parts — 3 Years Labor
   * Original main power rectifiers
   * Inverters (input and output rectifiers only)
2. 3 Years — Parts and Labor
   * Transformer/Rectifier Power Sources
   * Plasma Arc Cutting Power Sources
   * Semi-Automatic and Automatic Wire Feeders
   * Inverter Power Supplies
   * Intellitig
   * Engine Driven Welding Generators **(NOTE: Engines are warranted separately by the engine manufacturer.)**
3. 1 Year — Parts and Labor Unless Specified
   * DS-2 Wire Feeder
   * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
   * Process Controllers
   * Positioners and Controllers
   * Automatic Motion Devices
   * RFCS Foot Controls
   * Induction Heating Power Sources
   * Water Coolant Systems
   * Flowgauge and Flowmeter Regulators (No Labor)
   * HF Units
   * Grids
   * Maxstar 85, 140
   * Spot Welders
   * Load Banks
   * Racks
   * Running Gear/Trailers
   * Plasma Cutting Torches (except APT & SAF Models)
   * Field Options
     (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
4. 6 Months — Batteries
5. 90 Days — Parts
   * MIG Guns/TIG Torches
   * Induction Heating Coils and Blankets
   * APT, ZIPCUT & PLAZCUT Model Plasma Cutting Torches
   * Remote Controls
   * Accessory Kits
   * Replacement Parts (No labor)
   * Spoolmate Spoolguns
   * Canvas Covers

Miller's True Blue® Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear. (Exception: brushes, slip rings, and relays are covered on Bobcat, Trailblazer, and Legend models.)**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Miller's option of repair or replacement will be F.O.B., Factory at Appleton, Wisconsin, or F.O.B. at a Miller authorized service facility as determined by Miller. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.

Owner's Record

Please complete and retain with your personal records.

Model Name Serial/Style Number

Purchase Date (Date which equipment was delivered to original customer.)

Distributor

Address

City

State Zip

For Service

Call 1-800-4-A-Miller or see our website at www.MillerWelds.com to locate a DISTRIBUTOR or SERVICE AGENCY near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:	Welding Supplies and Consumables
	Options and Accessories
	Personal Safety Equipment
	Service and Repair
	Replacement Parts
	Training (Schools, Videos, Books)
	Technical Manuals (Servicing Information and Parts)
	Circuit Diagrams
	Welding Process Handbooks
Contact the Delivering Carrier for:	File a claim for loss or damage during shipment.
For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.	

Miller Electric Mfg. Co.
An Illinois Tool Works Company
1635 West Spencer Street
Appleton, WI 54914 USA

International Headquarters–USA
USA Phone: 920-735-4505 Auto-Attended
USA & Canada FAX: 920-735-4134
International FAX: 920-735-4125

European Headquarters – United Kingdom
Phone: 44 (0) 1204-593493
FAX: 44 (0) 1204-598066

www.MillerWelds.com

PRINTED IN USA

© 2002 Miller Electric Mfg. Co. 5/02